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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,021	02/01/2005	Mitsunori Toyoda	122349	9499

25944 7590 09/14/2006

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EXAMINER

MATHEWS, ALAN A

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/521,021

Applicant(s)

TOYODA, MITSUNORI

Examiner

Alan A. Mathews

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-47 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-32, 46 and 47 is/are allowed.
- 6) ☒ Claim(s) 33 - 35, 37, 39- 45 is/are rejected.
- 7) ☐ Claim(s) 36 and 38 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/8/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

DETAILED ACTION

Objections

1. Claim 38 is objected to for the following reasons. Claim 38 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 25. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

2. Claims 39, 43, and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 39, line 5 of claim 39, there is no proper antecedent basis in the claim for the expression “the parameter β ”. Furthermore, the parameter β has not been defined. Therefore, it is impossible to determine what is being claimed. Similarly, in claim 43, line 5 of claim 43, there is no proper antecedent basis in the claim for the expression “the parameter β ”. Therefore, it is impossible to determine what is being claimed. Similarly, in claim 45, line 7 of claim 45, there is no proper antecedent basis in the claim for the expression “the parameter β ”. Therefore, it is impossible to determine what is being claimed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 33, 37, 40, and 41 are rejected under 35 U.S.C. 102(a) as being anticipated by Matsushita et al. (U. S. Patent Application Publication No. 2002/0126390 A1). Matsushita et al. discloses in figure 4 and paragraphs # 0013 and # 0080, a first optical member having a refractive index of n_3 and having an integrally formed plurality of first minute refraction surfaces. Matsushita et al. further discloses in figure 4 a second optical member having a refractive index of n_2 and having an integrally formed plurality of second minute refraction surfaces that optically correspond to the plurality of first minute refraction surfaces. As disclosed in paragraph # 0080, $n_3 > n_2$. The preamble has not been given any patentable weight.

5. Claims 33, 37, 40, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Kasuyama (U. S. Patent No. 6,757,106). Kasuyama discloses in figure 2 a first optical member 3 having an integrally formed plurality of first minute refraction surfaces and a second optical

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member 10 having an integrally formed plurality of second minute refraction surfaces, which are provided to optically correspond to the plurality of first minute refraction surfaces. Column 12, lines 1-30, disclose that the second optical member 10 has a higher refractive index (e.g. 1.83) than the refractive index of optical member 3 (e.g. 1.52). Figure 17 and column 19, lines 9-42, disclose another embodiment of first optical member 2 and second optical member 12. Figures 18 and column 19, lines 64-67, and column 20, lines 1-44, disclose other embodiments of first optical member 2 and second optical member 65. Column 21, lines 20-53, also discloses using different refractive indexes for the two optical elements in figures 21 and 22. With respect to claim 37, column 22, line 34 discloses aspherically formed optical members. The preamble has not been given any patentable weight.

6. Claims 33, 37, 40, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by the Japanese Patent document 2000-098102. The Japanese Patent document 2000-098102 discloses in figure 9 and the Abstract, a first optical member 33 and a second optical member 34. Paragraphs # 0028 and # 0047 and # 0058 of the translation discloses that the refractive indexes of the optical elements are $n_1 < n_2 < n_3$. With respect to claim 40, figure 8 discloses an illumination optical device.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasuyama (U. S. Patent No. 6,757,106) as applied to claim 33 above, and further in view of the Japanese patent document 07-098402. Kasuyama discloses the invention except for specifically reciting the difference in the index of refraction $0.05 \leq n_b - n_a$. The Japanese patent document 07-098402 discloses in paragraph # 0100 of the English translation a refractive index difference of about 0.05. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the index of refraction differences $0.05 \leq n_b - n_a$ in Kasuyama in view of the Japanese patent document 07-098402 for the purpose of making a smaller difference and thus making better optical image.

9. Claims 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese Patent document 2000-098102 as applied to claim 40 above, and further in view of either Tanitsu et al. (U. S. Patent No. 6,741,394) or the German patent document DE 100 62 579 A1 (cited in Applicant's IDS). The Japanese Patent document 2000-098102 discloses in figure 8 optical elements 33 and 34 of different refractive indexes and a projection system. Liquid crystal component 32 is effectively a mask with a pattern. Thus, the Japanese Patent document 2000-098102 discloses the invention except for element 51 being a photosensitive substrate. Tanitsu et al. discloses in figure 8 and column 16, lines 53-67, and column 17 and column 18, lines 1-20, a projection system projection on a photosensitive substrate P. The German patent document DE 100 62 579 A1 discloses in figure 8 a projection system projecting on a photosensitive substrate

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P. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the projection screen 51 in the Japanese Patent document 2000-098102 a photosensitive substrate in view of Tanitsu et al. or the German patent document DE 100 62 579 A1 for the purpose of making the device in the Japanese Patent document 2000-098102 more versatile.

Allowable Subject Matter

10. Claims 19-32, 46, and 47 are allowed. Claim 38 cannot be allowed because it is a duplicate of claim 25. Claims 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not disclose or suggest wherein a parameter β satisfies the following conditions:

$$\beta < 0.2 \text{ (where } \beta = (\gamma-1)^3 \cdot NA^2/\Delta n^2 \text{)}$$

where a refracting power ratio ϕ_a/ϕ_b between ϕ_a , a refracting power of the first minute refraction surfaces, and ϕ_b , a refracting power of the second minute refraction surfaces, is γ , numerical aperture on the emission side of the optical integrator is NA, and a difference between a refraction index of a medium on a light entrance side of the second minute refraction surfaces and a refraction index of a medium on a light emission side of

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the second minute refraction surfaces is Δn ., in combination with all the other elements (or steps in claim 47) recited in each of independent claims 19, 46, and 47.

The prior art does not disclose or suggest an optical integrator used for light having a wavelength of 300nm or less, wherein the optical material forming the first optical member includes fluorite, and wherein the optical material forming the second optical member includes silica glass in combination with all the other elements recited in the parent claim to dependent claim 36.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents cited in the PTO-1449 are cited for the same reasons they were cited in Applicant's IDS.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan A. Mathews whose telephone number is (571) 272-2123. The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alan A. Mathews
Primary Examiner
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AM